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New U.S. Patent Application Daniel Patrick MORRIS et al. Atty. Dkt. No. 056258-5076-US

IN THE CLAIMS

Claims 1 – 55 (cancel)

- 56. (new): A toner for developing an electrostatic image comprising toner particles which include a binder resin, a wax and a colorant, wherein the wax has a melting point of between 50 and 150°C, and the wax exists in the toner particles in domains of 2 μm or less mean particle size and wherein
- (a) the mean circularity of the toner particles as measured by a Flow Particle Image Analyser is at least 0.90;
- (b) the shape factor, SF1, of the toner particles is in the range from 130 to 150; and
- (c) the ratio SF1/SF2 of the shape factor, SF1, to the shape factor, SF2, is from 1.07 to 1.13.
- 57. (new): A toner according to Claim 56 wherein the mean circularity of the toner particles is in the range from 0.93 to 0.99.
- 58. (new): A toner according to Claim 57 wherein the mean circularity of the toner particles is in the range from 0.94 to 0.96.
- 59. (new):. A toner according to Claim 56 wherein SF1 of the toner particles is at most 145.
- 60. (new): A toner according to Claim 59 wherein SF1 of the toner particles is in the range from 135 to 145.

- 61. (new): A toner for developing an electrostatic image comprising toner particles which include a binder resin, a wax and a colorant, wherein the wax has a melting point of between 50 and 150°C, and the wax exists in the toner particles in domains of 2µm or less mean particle size and wherein
- (a) the mean circularity of the toner particles as measured by a Flow Particle Image Analyser is in the range from 0.94 to 0.96;
- (b) the shape factor, SF1, of the toner particles is in the range from 135 to 145; and
 - (c) SF1 > SF2.
- 62. (new): A toner according to claim 56 wherein SF2 of the toner particles is in the range from 120 to 140.
- 63. (new): A toner according to Claim 57 wherein SF2 of the toner particles is in the range from 125 to 135.
- 64. (new): A toner according to Claim 56 wherein the BET surface area of the particles is 0.7-1.1 m²/q.
- 65. (new): A toner according to Claim 56 wherein the wax exists in the toner in domains of mean diameter 1.5µm or less.
- 66. (new): A toner according to Claim 56 wherein the binder resin is prepared from at least one latex containing a resin having a monomodal molecular weight distribution and at least one latex containing a resin having a bimodal molecular weight distribution.
- 67. (new): A toner according to Claim 66 wherein the monomodal molecular weight resin is a low molecular weight resin and has a number average molecular weight of from 3000 to 10000.

- 68. (new): A toner according to Claim 66 wherein the bimodal resin has a weight average molecular weight of from 100,000 to 500,000.
- 69. (new): A toner according to Claim 56 wherein the resin comprises a copolymer of (i) a styrene or substituted styrene, (ii) at least one alkyl acrylate or methacrylate and (iii) an hydroxy-functional acrylate or methacrylate.
- 70. (new): A toner according to Claim 56 wherein the amount of wax is from 3 to 20 wt%.
- 71. (new): A toner according to Claim 56 which further comprises a charge control agent.
- 72. (new): A process for forming an image, the process comprising developing an electrostatic image using a toner according to claim 56, wherein the haze at a print density of 1.0 mg/cm² is below 40, and the ratio of the values at fusion temperatures of 130 and 160°C is at most 1.5.
- 73. (new): A process for the manufacture of a toner for developing an electrostatic image comprising toner particles which include a binder resin, a wax and a colorant, wherein the wax has a melting point of between 50 to 150°C; and the wax exists in the toner particles in domains of 2µm or less mean particle size and wherein
- (a) the mean circularity of the toner particles as measured by a Flow Particle Image Analyser is at least 0.90; and
 - (b) the shape factor, SF1, of the toner particles is at most 165, which process comprises the following steps:
 - providing a latex dispersion which has at least one latex with a monomodal molecular weight distribution and has at least one latex with a bimodal molecular weight distribution;
 - II. providing a wax dispersion;
 - III. providing a colorant dispersion

- IV. mixing the latex dispersion, wax dispersion and colorant dispersion; and
- V. causing the mixture to flocculate.
- 74. (new): A process according to Claim 73 wherein the monomodal molecular weight latex has a number average molecular weight of from 3000 to 10000.
- 75. (new): A process according to Claim 74 wherein the monomodal molecular weight latex has a number average molecular weight of from 3000 to 6000.
- 76. (new): A process according to Claim 73 wherein the bimodal latex has a weight average molecular weight of from 100,000 to 500,000.
- 77. (new): A toner according to Claim 76 wherein the bimodal latex has a weight average molecular weight of from 200,000 to 400,000.
- 78. (new): A process according to claim 73 further comprising heating the flocculated mixture obtained after step (v) to form loose aggregates of particle size from 3 to 20µm.
- 79. (new): A process according to Claim 78 further comprising heating the aggregates to a temperature above the T_g of the latex to induce coalescence to form toner particles.
- 80. (new): A process according to Claim 73 wherein the latex dispersion comprises an ionic surfactant.
- 81. (new): A process according to claim 73 wherein the latex containing a resin having a bimodal molecular weight distribution is prepared by a process comprising the successive steps of forming a polymer of high molecular weight distribution followed by forming a polymer of low molecular weight distribution such that the resulting latex comprises composite particles comprising both said low molecular weight polymer and said high molecular weight polymer.

- 82. (new): A process according to Claim 73 which, prior to step iv, further comprises the step of providing a charge control agent dispersion, which dispersion is then incorporated in step iv by mixing.
- 83. (new): A process according to claim 82 wherein the charge control agent is milled with the colorant.
- 84. (new): A process according to claim 73 wherein the preparation of the wax dispersion comprises the mixing together of the wax with an ionic surfactant.
- 85. (new): A process according to claim 73 wherein the preparation of the colorant dispersion comprises the milling together of the colorant with an ionic surfactant.
- 86. (new): A process according to claim 73 wherein the dispersions of latex, colorant, wax, and charge control agent where present, have the same sign charge on the surfactant.
- 87. (new): A process according to claim 86 wherein the surfactant present in the dispersions contains a group which can be converted from an ionic to a non-ionic form and vice versa by adjustment of pH.
- 88. (new): A toner for developing an electrostatic image which has been obtained by the process of claim 73.